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VOICE OF THE ELECTRIC UTILITY INDUSTRY

Industry reacts to FERC

Comments vary widely concerning proposed rules

WASHINGTON—By May 12, industry leaders are to formulate the first of three written responses to the Federal Energy Regulatory Commission's proposed rulemakings intended to increase competition, as PURPA originally intended.

The first comments will cover administrative avoided cost. Written comments on proposals for bidding and IPPs are due June 13, and reply comments a month after that, as reported in April's *EL&P*.

In addition to the three rulemakings, Commissioner Charles C. Stalon submitted a wheeling proposal for comment. FERC has said transmission action will follow by year's end.

Proposed rules outlined

The proposed rulemaking on administrative avoided cost, under Public Utility Regulatory Policies Act RM88-6, is to provide extra guidance to states that choose to set the costs utilities must pay to qualifying cogeneration and small-power production facilities.

The proposed rulemaking on competitive bidding programs would establish rates for power purchasers from qualifying facilities (QFs) under PURPA RM88-5. It would give states the option of using bidding and sets guidelines for state regulatory authorities and nonregulated electric utilities to accurately set avoided costs of utilities in purchasing power from QFs. Briefly:

√ Bidding would be voluntary.

√ At the state's discretion, bidding could extend to all sources, including bids by the native utility.

√ Nonprice criteria, such as reliability and dispatchability, would be factored into bidding evaluation.

The proposed rule on IPPs, addressing PURPA RM88-4, proposes streamlining regulations for independent power producers. IPPs sell power to customers in areas where they have no service franchise and lack significant market power. Under the proposal, IPP:

√ Rates determined through competitive bidding or rate negotiation would be accepted under the Federal Power Act. Rates would be subjected to a price cap based on the purchaser's current or projected avoided cost.

√ Facilities would be exempted from cost-related accounting, reporting and record-keeping requirements.

√ Corporate regulation procedures and

Continued on page 7

LATE NEWS

UtiliCorp United will buy NECO Enterprises, the parent company of Newport Electric Corp., for $21.5 million. The purchase is to be made with 55-percent cash and 45-percent UtiliCorp stock. NEC distributes electricity to 30,000 customers in Rhode Island. UtiliCorp, based in Kansas City, sells electricity and gas in seven states. Regulatory approval is expected by late summer.

Illinois Power Co. was 89-percent prudent in activities related to the $4.3-billion, 950-MW, Clinton nuclear power station, says the audit team of Touche-Ross and Nielson Wurster. IP said it "strongly disagrees" with the $455.8-million disallowed recommendation, citing three company-sponsored audits that show "a pattern of responsible, responsive, capable management."

CMS Energy Corp. agreed to buy 49 percent of Oxford Energy Co., a resource recovery and power generation firm, for an undisclosed amount under $30 million. See related story, page 20.

Westinghouse and ABB to merge T&D, generation

PITTSBURGH—Westinghouse Electric Corp. and ABB Asea Brown Boveri Ltd. signed a memorandum of understanding to establish two joint ventures to serve the power generation, transmission, and distribution fields in North America and selected international areas, in a surprise announcement on April 12. The agreement was announced jointly by John C. Marous, chairman and chief executive of Westinghouse, and Percy Barnevik, president and chief executive of ABB.

The formation of the partnerships is subject to definitive agreements, approval by the respective boards of directors, and government approvals. Finalization is expected late in '88.

Two partnerships

The memorandum proposes two different partnerships between the corporations. The first partnership will be for the manufacture, sale, service, and maintenance of steam turbines and generators for regulated utilities in the United States and Canada. The second will involve equipment for transmission and distribution.

Westinghouse will have 55 percent of each partnership and ABB will have 45

Continued on page 17

Canadian power exports to U.S. jumped 34% in '87, 2% of U.S. use

MONTREAL—Exports of electricity to the United States from Canada increased by 12.1-billion kWh in 1987, to 47.4-billion kWh. This represents a gain of just over 34 percent for the year, according to an analysis of Canadian National Energy Board statistics by the Canadian Electric Association.

While Canadian exports of electricity soared in 1987, they nevertheless represented only eight pecent of Canadian output and two percent of U.S. consumption.

During the same time, U.S. export revenues to Canadian utilities increased by 12 percent, to $1.2-billion (Canadian).

BC recorded biggest gain

Although much publicity has focused on the negotiations and agreements of eastern Canadian utilities and their counterparts in the Northeastern part of the U.S., the largest 1987 increase in exports was recorded, somewhat surprisingly, by British Columbia on the West Coast. BC's export of electricity increased about 600 percent to 13-billion kWh. Revenues surged 380 percent, to $200-million (Canadian).

While the increases were especially large in 1987, the province has been subject to substantial swings in recent years because of transmission access problems in the Pacific Northwest, where U.S. utilities received first rights to available trans-

Continued on page 8

New Nuclear Units

Twenty-one nuclear units were started up, worldwide, in 1987, bringing the total to 416 reactors with capacity of 294,864 MW in 26 countries, according to the International Atomic Energy Agency in Vienna. New in 1987:

U.S. ⚛⚛⚛⚛⚛⚛⚛⚛

France ⚛⚛⚛⚛

U.S.S.R. ⚛⚛⚛⚛

Bulgaria ⚛

Canada ⚛

Czechoslovakia ⚛

Hungary ⚛

Japan ⚛

NRC votes to restart Sequoyah 2

The Nuclear Regulatory Commission voted to allow two closed nuclear plants to be restarted—the Tennessee Valley Authority's Sequoya 2 (shown above) and the Sacramento Municipal Utility District Rancho Seco. Both had been closed since 1985; Sequoya 2 since August and Rancho Seco since December. The Sequoya plant, near Chattanooga, TN, is the first of TVA's five shut nuclear plants to be restarted. TVA expected the facility to resume commercial operation in a few days and to be up to full power in weeks. In its March 15 report, the Advisory Committee on Nuclear Reactor Safeguards noted that TVA had addressed the problems and deficiencies that had been found at the plant.

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News Briefs

JILL MINNER, Assistant Editor

UtiliCorp to purchase Newport Electric Corp.

UtiliCorp United has reached an agreement with NECO Enterprises, Inc. to purchase NECO, the parent company of Newport Electric Corp., for approximately $21.5 million in stock and cash. Under the agreement, UtiliCorp will buy all of the outstanding stock of NECO Enterprises for $22 per share. "Newport Electric is a winter-peaking utility that balances our predominantly summer-peaking electric operations, in addition to spreading our regulatory and climate risk," stated UtiliCorp President and CEO Richard C. Green, Jr. "We intend to operate Newport Electric as a division under its existing name and without any change in management or employees."

Bonneville Pacific buys PTS majority interest

Bonneville Pacific Corp. has acquired a controlling interest in Pacific Turbine Systems, Inc. According to Bonneville Pacific Chairman Raymond L. Hixson, the company wants to play a significant role in the emerging energy storage business while expanding its new business opportunities throughout the country. "PTS has developed an innovative, cost effective and environmentally benign technology that can be immediately applied to solve the [energy] shortfall problem. It will generate enough power to allow existing power companies to meet maximum energy demand without adding new generating capacity," Hixson added.

General Cable division acquires Holan line

General Cable Company's Apparatus Division recently acquired the Holan product line from Dorsey Trailers, Inc. Holan manufactures heavy-duty material handling aerial lifts for the power utility industry, line vehicles and aerial lifts for telecommunications systems and streetlight maintenance. Apparatus Division President Van Walbridge explained that the acquisition is an implementation of the division's long-range strategic plan to provide a full line of high quality products and services to the telecommunication and power utility industries.

GPU to make Energy Initiatives a subsidiary

General Public Utilities Corp. (GPU) said it plans to make Energy Initiatives, Inc. (EII) one of its subsidiaries. Energy Initiatives develops cogeneration and small-power-production projects, and has been operating as a subsidiary of Jersey Central Power & Light Co. (one of GPU's operating utility subsidiaries). According to GPU Chief Financial Officer John G. Graham, "...moving EII from JCP&L to GPU will allow EII to aggressively pursue cogeneration and independent power opportunities throughout the U.S." "EII also will provide us with the ability to take minority equity positions in independent power projects, whether they are developed by EII or others," Graham added.

Low revenues force Idaho Power to request surcharge, cut budget

Idaho Power Company has asked the Idaho Public Utilities Commission for a $41.3-million temporary surcharge on electric rates in order to deal with its worsening revenue situation. The revenue shortfalls, caused in part by a two-year drought, have already forced the utility to reduce its workforce; institute a hiring freeze; defer material-intensive construction projects; eliminate all but essential employee travel; and eliminate company-sponsored employee activities.

NRC asks utilities to inspect electrical relays

Utilities operating or building nuclear power plants have been requested by the Nuclear Regulatory Commission to inspect certain electrical relays made by General Electric Company. General Electric told the NRC that some of its latch-type electrical relays were not operating properly and that premature unlatching could occur. The commission said it has asked licensees to check for adequate latch engagement in specified models used in safety-related equipment. The inspection should be made for all specified relays manufactured before November 1, 1987.

Florida Power, Wolf Creek fined by NRC

The Nuclear Regulatory Commission said it has proposed $100,000 fines against both Florida Power Corp. and Wolf Creek Nuclear Operating Corporation. Florida Power received a civil penalty for alleged noncompliance with NRC requirements at the Crystal River nuclear power plant. Wolf Creek was fined for violations of NRC regulations that took place during a refueling shutdown at the company's Wolf Creek generating station.

Hanford to evaluate metal fuels for FFTF

Westinghouse Hanford Company announced that it will evaluate metal fuel, instead of ceramic oxide, as a core for the Fast Flux Test Facility. "The purpose is to evaluate the metal fuel and verify its potential advantages in lower fuel-cycle costs, increased inherent safety, and increased proliferation resistance," explained Michael K. Korenko, manager of the company's advanced reactor development division. After a metal fuel process line is established and the metal fuels have been tested, several prototype metal fuel assemblies will be built, Korenko said. Hanford expects the equipment to be fully operational in 1989.

NorLight doubles capacity to Chicago

According to Norlight, it has doubled its fiber optic communications network transmission capacity between Milwaukee and Chicago and between Chicago and Janesville, WI. The added capacity, which went into service April 1, was needed to handle an increased volume of voice and data transmissions over the fiber optic lines, said NorLight President Gary Henshue. NorLight is a partnership of subsidiaries of five utilities, which operates the fiber optic communications network linking Chicago, Milwaukee and Minneapolis.

Guzzle to head TECO

Timothy L. Guzzle

Timothy L. Guzzle was appointed president and chief operating officer of TECO Energy, Inc. succeeding H.L. Culbreath who will continue as chairman and CEO. Guzzle previously worked for Allegheny International, Inc. as president of industrial and technology businesses, corporate executive vice president and corporate director. "Following many conversations with Tim and members of our Board, it became clear to us that his strength in the leadership of complex, diversified corporations was the quality we needed most for the future of TECO Energy. His excellent track record was very attractive to all of us," noted Culbreath. TECO Energy is a diversified, energy-related holding company. Its principal operating companies include Tampa Electric, TECO Diversified and TECO Investments.

GPU president to retire

General Public Utilities Corp. President and Chief Operating Officer Herman M. Dieckamp annouced that he plans to retire on June 30. Dieckamp, who will turn 60 in June, served at his current position for most of his 15 years with the company. "Herman Dieckamp had an important and positive impact on the GPU system throughout his time with us. He will be missed," said GPU Chairman and CEO William G. Kuhns.

WNFM appoints Wolf chairman; Clements named vice chairman

Walt H. Wolf was named chairman of the World Nuclear Fuel Market's Board of Governors and Andrew A. Clements was chosen as vice chairman.

Wisconsin Energy says earnings grew, energy prices were down in '87

Wisconsin Energy Corp. reported a year of solid growth in earnings and low energy prices in 1987. Wisconsin Energy Chairman and CEO Charles S. McNeer said that the company has employed aggressive marketing of conservation programs to help meet the demand for power, while keeping electric rates low by delaying the need for new power plants. The company's long-term planning stresses conservative financial management and aggressive operations management. "The plan combines a comprehensive energy conservation program for customers, the purchase of an existing power plant, the installation of small combustion turbines and the renovation of several older generating units to extend their operating lives," explained McNeer. "Our principal business will continue to be electric and gas operations with careful and deliberate moves into diversified areas designed to pave the way for business growth," he added.

Hearings conducted on hydropower contracts

A portion of the New York Power Authority's (NYPA) new statewide hydroelectric power allocation program was the subject of a public hearing held recently in Albany, NY. The hearing concerned three proposed contracts that would provide Niagara Mohawk Power Corp., New York State Electric & Gas Corp. and Rochester Gas & Electric Corp. with low-cost hydropower from NYPA's Niagara and St. Lawrence-Franklin D. Roosevelt Projects. The utilities would then provide the power, without profit, to residential and farm consumers. NYPA Chairman Richard M. Flynn said that Power Authority trustees would not approve the proposed contracts until satisfactory arrangements are completed for transmission of NYPA electricity by the three utilities to municipal electric systems, rural cooperatives and industrial customers. At press time, negotiations between NYPA and the utilities were still underway. The new contracts would extend through 2007 and would replace agreements that expire Jan. 1, 1990.

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NU, NEES show interest in PSNH operating assets

MANCHESTER, NH—Northeast Utilities and New England Electric System have expressed interest in buying the operating assets of Public Service of New Hampshire, a neighboring utility that has been under Chapter 11 protection since Jan. 28.

Both NU and NEES officials said, however, they would rather not increase their shares of the troubled Seabrook nuclear plant. NU owns 4.1 percent of Seabrook through Connecticut Light & Power; NEES, 10 percent, through New England Power Co.; and PSNH, 35.6 percent.

Timing uncertain

Timing for any action is uncertain because approval of shareholders, the court, and state and federal regulators would be necessary. Price was not discussed, although the operating assets have a book value near $800 million.

William B. Ellis, NU's chairman and CEO, said, "We continue to believe that Seabrook is needed for New England, and that it should be allowed to operate, but we are not planning to increase our investment in the plant."

Robert J. Harrison, president and chief executive officer of PSNH, said, "PSNH is, as it always have been, committed to fully exploring all options available to determine the best course of action for its customers, creditors and employees."

NU's Ellis said, "Our preliminary analysis suggests that there is more value for customers in an NU-PSNH combination than any others," perhaps referring to NU's surplus capacity in an energy-deficit region.

NU, the large New England utility system, has 1.025-million customers in Connecticut and 185,000 in western Massachusetts.

NEES has a slightly better debt rating than NU and has 32,000 customers in New Hampshire through its Granite State Electric Co. NEES' customers in Massachuesetts and Rhode Island, total 1.204 million.

Moody's Investor Service said a sale to either NU or NEES would likely involve some form of rate stabilization for New Hampshire customers, making the transaction attractive to many. Moody's confirmed the debt and preferred stock ratings of Connecticut Light & Power Co. and Western Massachusetts Electric Co., the principal operating subsidiaries of NU.

NEES System Senior Vice President-Finance Alfred Houston said if the sale went through, "Another New Hampshire subsidiary of NEES would be formed. The [PSNH] employees would work either for the new company or be given the opportunity to be transferred to one of our other System companies."

PSNH files appeal

In related news, PSNH appealed to the U.S. Supreme Court to overturn the NH Supreme Court's decision upholding the constitutionality of the state's anti-Construction Work In Progress (CWIP) law.

As part of PSNH's response to its financial crisis related to Seabrook debt, the utility sought an emergency rate increase to avoid filing for bankruptcy protection.

PSNH argued that the state's anti-CWIP law is unconstitutional because it deprives PSNH of financial integrity without meaningful balancing as mandated in *Federal Power Commission* vs. *Hope Natural Gas Co.* and without a hearing by the state PUC to establish just and reasonable rates. PSNH, as 35.6-percent owner, has more than $2 billion invested in the plant.

NRC gets Seabrook report

By late April, the Seabrook owners, as a last requirement for low-power licensing, were to submit to the Nuclear Regulatory Commission a technical addition to its emergency plan, explaining how Massachusetts residents will be notified in a crisis.

Those Massachusetts communities within the emergency-planning radius of the New Hampshire plant won the right to remove their sirens as a result of a court case to block the plant's opening. Robert Williams, a spokesman for plant operator, New Hampshire Yankee, said helicopter and truck-mounted sirens will notify (those) residents.

Williams said several technical requirements and opponents' protests to the NRC about PSNH financial health stand in the way of full-power licensing. Other major owners, Williams added, have stated their committment to seeing the project through.

UI sells transmission for $1.4 million

WESTBORO, MA—A New England Electric System subsidiary has agreed to buy United Illuminating's 5.49-percent share of the Hydro-Quebec Phase 2 transmission project for $1.4 million, pending regulatory approval expected in July. Hearings, which began in March, will resume later this month.

UI officials said extended delays in the permit process and in completing reliability studies have caused project participants to provide more funding than originally anticipated and prompted the sale. The price consists of the amount UI paid into the project, plus interest. UI continued to support the project, saying it would benefit the region, particularly for companies short on capacity.

NEES already owns 18 percent of the project coordinated by the New England Power Pool. New England Power Co. is planning the purchase, while other NEES subsidiaries are financing, engineering and constructing the 1310-MW project. Construction began in February in Massachusetts and April in New Hampshire. The project expands the final transmission link to 2000 MW.

A NEES spokeswoman called the project vital for NEES, saying the additional capacity is welcome. The soon-to-be-completed reliability studies are required before issuance of a Department of Energy presidential permit. Operation, expected by 1990, requires the DOE permit.

When completed, the five converter-terminal system will extend 930 miles from Quebec to Sandy Pond substation in Massachusetts.

The pending sale does not affect UI's 5.75-percent share of the H-Q Phase 1 project, which now provides 35 MW.

Other main owners in Phase 2 include Connecticut Light & Power, with 18.8 percent; Boston Edison, with 11 percent; Public Service of New Hampshire, with 10 percent; Vermont Electric Cooperative, with 9 percent; Central Maine Power, with 7 percent; and Northeast Utilities' Western Massachusetts Electric, with 3.8 percent. Various municipals own other portions.

Appropriations decrease in '87

Capital Appropriations and Expenditures of Investor-Owned Gas and Electric Utilities, 1986-1987*
(Millions of dollars, seasonally adjusted quarterly totals)

	'86 3rd Q	'86 4th Q	'87 1st Q	'87 2nd Q	'87 3rd Q
Total Utilities					
Appropriations	5,530	5,491	6,482	5,569	5,188
Cancellations	101	416	-329	131	65
Capital Expenditures	7,535	6,080	7,649	7,032	7,746
Appropriations backlog at end of quarter	46,699	45,694	44,856	43,262	40,589
Electric Utilities					
Appropriations	4,261	3,882	5,036	4,275	3,904
Cancellations	133	231	-444	-1	0
Capital Expenditures	6,279	4,799	6,353	5,709	6,360
Appropriations backlog at end of quarter	44,092	42,944	42,071	40,638	38,182
Gas Utilities					
Appropriations	1,269	1,609	1,446	1,294	1,234
Cancellations	-32	185	115	132	65
Capital Expenditures	1,256	1,281	1,296	1,323	1,386
Appropriations backlog at end of quarter	2,607	2,750	2,785	2,624	2,407

*Estimated totals for all investor-owned gas and electric utilities, based on a sample survey.

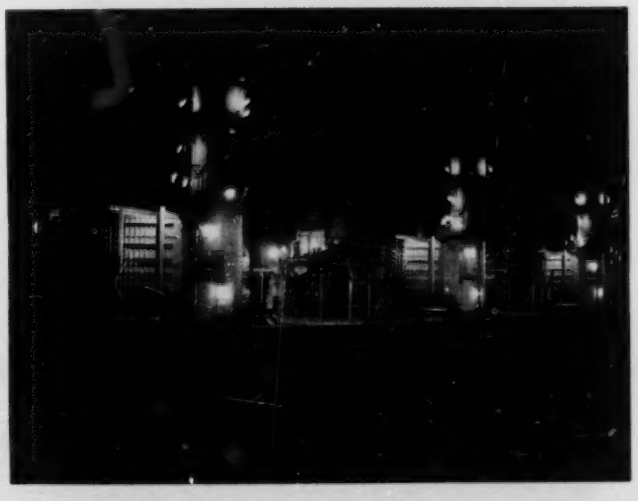
Source: Utility Investment Statistics, Utility Appropriations (Fourth Quarter 1986), Edison Electric Institute, American Gas Association, and The Conference Board.

WASHINGTON—"The investor-owned utilities appear headed for contraction," notes Kenneth Goldstein, The Conference Board economist. "Excess capacity, sluggish demand and regulatory and competitive pressures are likely to hold down capital spending throughout 1988."

Goldstein based his comments on the decline in utility appropriations from $6.48 billion to $5.19 billion during the first three quarters of 1987 (see table and p.46).

Appropriations precede equipment orders, construction contracts and actual expenditures.

Cogeneration added in California, ratepayers to be hit



Three of the four units of the new Sycamore 300-MW cogeneration plant shine out at night. The $165-million plant combines its output with another cogen plant to produce up to 600 MW of electricity for Southern California. The two facilities also will generate 3.6-million pph of steam to help recover as much as 127,000 bbl per day of heavy crude oil from the Kern River oil field adjacent to Sycamore.

SACRAMENTO, CA—The photograph shows a brand-new cogeneration plant in Southern California. But it is not necessarily a positive sign.

J. Steven Herod, FERC director of regulation, noted that pricing under the Public Utilities Regulatory Policy Act has not worked well, particularly in California. He pointed out that Southern California Edison and Pacific Gas & Electric made more than $1 billion and $800 million, respectively, in overpayments to PURPA-qualified facilities because of an oversupply of power and the administrative pricing guidelines.

Bears out report

This bears out a late-1987 report to the state legislature on joint California Energy Commission/California Public Utilities Commission hearings concerning excess generating capacity in the state. The hearings noted how the California Legislature had predicted that proposals for new generating plants exceeded the reasonably-foreseeable demand for electricity in the state.

Capacity surpluses were predicted to continue through the mid-'90s for most of the areas covered. And the hearings confirmed that ratepayers would bear the burden of paying for this excess.

The estimated amounts of these overpayments varied widely, but all agreed that they would have to be made and that they would be large.

Attempts by *EL&P* to reach anyone at CPUC to comment on the hearings' report or to update it met with no success. Chuck Imbrecht, chairman of CEC, told *EL&P* that his group and CPUC are working to establish new types of bidding contracts to avoid these overpayments in the future.

COMMENTARY

It's time for utilities to get their nuclear act in order

The nuclear industry, if we believe its critics, is as dead as the dinosaur. Even the fact that there are some 109 nuclear units generating power in the U.S. doesn't impress them. If anything, the constant string of woes that have hit the increasing number of nuclear utilities—from insupportable debt to NRC's constant string of fines against utility operators of nuclear plant rule violations to forced closings of nuclear units ruled unsafe—provide critics with more powerful ammunition. Nuclear utilities may have circled the wagons, but can they hope to do more than just hold out?

There's little consolation to be found in recent events. Philadelphia Electric's inability to deal with its staffing, training and operating problems at Peach Bottom toppled its chairman and president. Boston Edison's Pilgrim Station remains an operational question mark. Others across the country are bogged down in correcting deficiencies and trying to get nuclear units completed, started or restarted. The fines keep coming, but the problems persist.

As might be expected, Congress appears to have sided with many of the critics of the nuclear industry and is calling for radical restructuring of the NRC. Congress does this sort of thing—yelling for a new format or organization, a reshuffle of the deck, so to speak—when it is confronted with a complex set of problems beyond its range of understanding and expertise.

The congressional approach is tantamount to hiring new inspectors for an automobile assembly line when the cause of accidents is really a design failure. It doesn't accomplish much, but it always gets attention in the press and looks like something important is being accomplished.

In the present situation, however, NRC may be a large part of the present problem, rather than its solution, not so much because of what it hasn't done, but rather because of what it has done...for all the million and one things it has done...sins of commission, not omission.

It seems to us that much of what may be wrong with the entire nuclear industry is the result of severe over-regulation. NRC dictates functional and safety performance standards, as well it should. But then it gets specific and tells utilities how to accomplish these functional requirements by the numbers and in infinite detail. NRC has written, or attempted to write, chapter and verse for any possible operational condition. The fact is that when compliance with such numerous and detailed rules is mandatory, it becomes difficult to go beyond the absolute requirement to comply.

The British long ago decided that the function of their nuclear regulatory agency was to ensure the safe operation of their nuclear plants. To do this, the U.K. Atomic Energy Authority developed basic functional criteria...requiring but a few dozen pages to formalize, assigning the how-to to the utility.

Conversely, the U.S. Atomic Energy Commission and its successor, the NRC, tell what must be done and how to do it....in thousands of pages. And still we have seemingly endless problems with our nuclear plant operations, despite the absolute, infinitely detailed regulation of NRC.

There's got to be a better way! We think self-regulation is the only answer.

Nobody in his right mind can think the NRC is going to go away. But if the industry wants to get off the defensive, it will have to get its act in order. That means better quality assurance of internal operations at each operating plant. It means a stronger role for the Institute of Nuclear Power Operations. It means higher operating costs. It means getting tough...in fact, not just in posture. It means acting...on employee drug testing, training...not reacting to NRC directives.

The nuclear industry will be needed in the future if the U.S. is to meet its demands for electricity and a cleaner environment. But unless there is a major turnaround in the acceptance of nuclear technology on the part of the general public, as well as Congress, no utility executive will bet his company's existence on a nuclear future.

If there is to be a future for the nuclear industry, the industry must do a better job of policing its own operations. But if it's done properly, even the NRC won't be able to mess it up again.

Robert A. Lincicome, Editor-in-Chief

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LETTERS

Shiftwork scheduling

Your article published in the August, 1987 edition of *Electric Light & Power*, under Generation Update, proved extremely interesting in pointing out deficiencies in the customary scheduling of shift workers.

Your summary paragraph states that I should not be operating on a 1940-era shift schedule. Your last sentence states, "There are a variety of solutions to the problem."

Having worked shift work for 28 years, while raising four children and since then having spent the last 15 years managing 50 operators on five shifts makes me some kind of an expert on the subject.

I try to keep an open mind on the subject and would be extremely pleased if I could improve the working conditions of my employees before my retirement date.

Thomas J. O'Reilly
Production Supervisor of Operations
Commonwealth Electric Co.
Canal Electric Company
Sandwich, MA

Ed. note: In reponse to a number of requests, a follow-up to our August '87 article on shiftwork scheduling appears on page 35.

NARUC's rate data

The March 1988 edition of *Electric Light & Power*, page 3, carried a table of the Ten Most Expensive Service Territories in the Continental United States. That table indicated that Central Vermont Public Service Corp. ranked seventh among the top ten for residential service, with an average rate of 11.1¢ per kWh for 500 kWh.

Unfortunately, the data (which the article indicated was taken from a NARUC study for the period December 1986 through February 1987) contained a significant error. The actual cost for that period for our company was an average rate of 10.2¢ per kWh. This value would have removed us from being considered as one of the ten highest-cost utilities. In fact, I believe that our ranking would have placed us at 23rd in the NARUC study.

In addition, it is very important to our company that proper recognition be given to the very seasonal structure of all of our retail rates. Our billings for 500 kWh, as of December 1986, was $33.94 while January and February 1987 billings at that level were $59.73, or a difference of 76 percent.

This differential reflects the very seasonal nature of the pricing signal which we give our customers, rather than the effects of a rate increase. This rate structure has been in place since 1974 and has served its intended purpose of encouraging our customers to moderate their use of energy during the traditional winter peak usage season in Vermont.

In the future, we ask that your staff check the data with our company, especially when the results would place us in a less-than-desirable category. Unfortunately, NARUC does not appear to check its data with the individual utilities before it is published.

Steven J. Allenby
Vice President
Central Vermont Public Service Corp.

Ed. note: Although EL&P attempts to verify the information it publishes, there is no way we can verify all the data used by others in the preparation of official or quasi-official studies. We would recommend that reader Allenby contact NARUC directly to clarify its winter/summer rate program.

EL&P mobile trade show tours mid-America during May and June

BARRINGTON—*Electric Light & Power's* traveling trade show, the *EL&P* Electric Utility Caravan, launches its five-week mid-American tour on May 10. This will be the second annual tour for the Caravan, following a successful swing through the East last spring.

The caravan is slated to make 46 stops to cover 53 utilities located from central Pennsylvania to western Kansas, and from the Canadian border to the Gulf of Mexico.

Thirty-two suppliers to the electric utility industry are participating in the 1988 tour.

Pennsylvania beginning

First stop on the tour will be Pennsylvania Electric Co., in Johnstown, PA, on May 10. From there, the Caravan will wind its way westward through Pennsylvania, northern Ohio, Michigan, northern Indiana, Wisconsin, Minnesota, Iowa, Nebraska, Kansas, Arkansas, Louisiana, Mississippi, Missouri, Illinois, central Indiana, Kentucky and central and southern Ohio. The 1988 Caravan will end at American Electric Power in Columbus, OH, on June 15.

The 1988 tour initially was slated for the fall, but was moved to the spring at the request of exhibitors, many of whom also participated in the 1987 Caravan.

EL&P sponsors the Electric Utility Caravan, which is conducted by Mobile Marketing Services, Inc.

Dates set

Utility visits are as follows showing dates and whether the visit will be in the morning or afternoon:

May
10 am Pennsylvania Electric Co.
10 am Allegheny Power Service Corp.
10 am West Penn Power Co.
10 pm Duquesne Light Co.
11 am Ohio Power Co.
11 pm Centerior Energy Corp.
11 pm Cleveland Electric Ill'g Co.
12 am Toledo Edison Co.
12 pm Detroit Edison Co.
13 am Detroit Edison Co.
13 pm Consumers Power Co.
16 am Indiana & Michigan Elec. Co.
16 pm Northern Indiana P.S.
17 am Wisconsin Electric Power Co.
17 pm Madison Gas & Electric Co.
17 pm Wisconsin Power & Light Co.
18 am Wisconsin Public Service Co.
19 am Superior Water, Light & Power
19 pm Minnesota Power & Light Co.
20 am Northern States Power Co.
20 pm Northern States Power Co.
20 pm Lake Superior District Pwr. Co.
23 am Interstate Power Co.
23 am Iowa-Illinois Gas & Electric Co.
23 pm Iowa Electric Light & Power Co.
24 am Iowa Public Service Co.
24 pm Nebraska Public Power District
25 am Omaha Public Power District
26 am Kansas City Power & Light Co.
26 pm Utilicorp United/Missouri P.S.
27 am KPL Gas Service Co.
31 am Centel Electric-Kansas
31 pm Kansas Gas & Electric Co.

June
2 am Arkansas Power & Light Co.
3 am Central Louisiana Electric Co.
6 am Louisiana Power & Light Co.

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Communications network connects MAPP utilities, improves efficiencies

MINNEAPOLIS—The 43 Upper-Midwest electric utility members of the Mid-American Power Pool (MAPP) have given final acceptance to a new communications network. The new network, which replaces a 1967 system that was upgraded with minicomputers in 1976, links all the member utilities and enables them to efficiently send messages for emergency backup, buy and sell surplus power on an hour-to-hour basis, monitor the regional power grid, and transfer data.

According to Duane Hawthorn, MAPP general manager, "With power plants and transmission lines from northern Manitoba to southern Nebraska and Montana to Wisconsin, this network is vital to the successful coordination of their operations." MAPP members serve an area of nearly one-million square miles.

"The network makes MAPP a leader in inter-utility coordination and equips MAPP to move ahead with the latest equipment," said Hawthorn. "A reliable and economical power supply is what we're striving for."

Faster emergency notification

Using the network, a power system operator can request reserve power from other utilities during an emergency, such as a plant failure. Once an operator requests assistance, the computer automatically notifies all other utilities in the pool of the share of the loss each is expected to make up.

The network also provides an electronic bulletin board of the hour-to-hour price and availability of blocks of power.

A team of engineers from the utilities and the MAPP staff laid out the basic structure of the system and specified what it should do. Digital Equipment Corp. was retained to design and install the network. The hardware consists of two VAX 8650 computers at the MAPP office. Dedicated communications lines connect these to smaller computers, MicroVAXs, located at the control center of each MAPP member utility. Here messages can be viewed on a screen, switched to other computers or printed and distributed within the company.

Message priority

"A unique feature of the network is the customized software for the message priority system," said Chuck Ruzin, MAPP's lead system analyst for the project. "There are ten levels of priority which assure that critical emergency messages always go first." At other times, the system can be used for electronic mail and data collection.

Power-system data and system-status information needed for coordination can be gathered automatically from members' Supervisory Control and Data Acquisition systems by the MicroVAX computers. This information is periodically retrieved by the central computer for processing. "The intent, wherever possible," said Ruzin, "is to have a machine, rather than a person, gather the data for accuracy and efficiency."

Modeling studies next

The network will also enable engineers and planners to access databases at member systems and members to transfer files for modeling studies of the power grid. This capability will be implemented in Phase Two of the network's development later this year. In the past, engineers relied on magnetic tapes and paper to transfer data.

During recent field tests, the network was available over 99.8 percent of the time, reported Ruzin. "We think this is an outstanding performance record," he said, "and we believe the network will continue to operate with the necessary high degree of reliability."

Southern connection

In addition to linking Upper Midwest utilities, the MAPP communications network is connected to utilities to the south and east through networks operated by the Southwest Power Pool (SPP), headquartered in Little Rock, AR, and the Mid-American Interconnected Network (MAIN) that is located near Chicago.

The MAPP system evolved from two earlier teletype networks installed in 1967 and operated by utilities in Iowa, Minnesota, Wisconsin and North Dakota. In 1973, a system using Honeywell minicomputers was added, comparable in power to today's personal computers. It provided the message switching and calculating capability.

"Although this system served MAPP well for 15 years, the larger, more powerful system became necessary to meet today's and tomorrow's greater demands for power supply," said Hawthorn.

Assn. founder cites trends for Automated Mapping/Facilities Management

SAN DIEGO— The founding president of Automated Mapping/Facilities Management International surprised the Winter Conference of the association by outlining ten trends that will lead to innovation in the graphic information and AM/FM systems.

Second generation

Chris Harlow, who now is editor of *F-M Automation Newsletter*, said that the 20-year-old industry is only now seeing its second generation of hardware and software.

Ten trends

His ten trends include:

1. Micro technology is growing up. Soon PCs and engineering workstations will be the primary platforms.

2. Improvements in graphic monitors at the PC level will accelerate development of full-scale PC systems. IBM's 8514 graphics card will lead the way.

3. Supercomputers are becoming even more powerful. Technologies developed in this area will help solve the compute-bound problems of the industry. This will be especially helpful in applying artificial intelligence.

4. AM/FM users are becoming more sophisticated. This will lead to even greater sophistication and more innovation.

5. More large companies are entering the AM/FM industry, including IBM, DEC, PrimeVision, McDonnell Douglas, Xerox, EDS and Apple.

6. Off-the-shelf land bases, raster data, Landsat and user acceptance of less than 2-cm accuracy are becoming commonplace and will continue.

7. Graphic information systems are gaining acceptance in other corporate departments. These include marketing, circulation, transportation, distribution real estate and insurance.

8. Major improvements are occurring in accessing host data. Mainframes are getting smarter and faster; so are communications channels and DASD.

9. Look for use of CD-WORM, generic databases, new venture capital, hybrid conversion and scanning technology, disposable land bases and friendlier software.

Humanizing mapping

10. Apple Computer will humanize mapping. They call it Desktop Mapping. More "tool kits" will be available to end users, and Apple will provide users and their bosses with a simple, nonthreatening hands-on experience. For the first time, administrators and executives will become graphic information system users and, as a result, will understand the need for large, integrated, geographic information systems.

Harlow formerly was vice president for Information Services, San Diego Gas & Electric Co.

Focus report

For more on AM/FM systems and applications, and what others see ahead, see the Special Focus report beginning on page 36.

Making rain-wet ladders safe

HELSINKI, FINLAND—Fiberglass ladders coated with common car wax show significantly higher resistivities in a wet environment than unwaxed ones.

Karolon Oy tested its fiberglass ladders, with waxed and unwaxed side rails, in accordance with the IEC 855, Paragraph 8.2, wet test methods for foam-filled tubes and solid rods. The wax used was a common, silicone car wax.

Dry tests

Testing was conducted in ambient conditions at 20°C, 60-percent relative humidity and had a maximum of 1-mA current at 270 kV over a distance of 2 meters.

The ladders then were exposed to 1.4 mm/min of rain, as per IEC 60, except that the water resistivity was 10.0 ohms/meter, rather than the 15.0 ohms/m the test called for. They were placed in different positions to see if this made any difference. It did — the highest currents were found when the ladders were standing upright. These upright values were the ones recorded:

Voltage (kV)	Current (mA) Samples 1	2	3
10.0	1.0	-	-
26.5	2.8	0.8	1.2
30.0	3.0	1.0	1.7
57.5	5.0	2.8	2.8

Since the Finnish standard allows for a maximum current of 1 mA, the untreated ladders would only be allowed to be used for working on systems up to 9 kV, maximum.

Wet tests

After waxing, the same tests under the same test conditions were repeated for the ladders. The resultant maximum permissable working voltage increased to 80 kV, almost nine times that of the untreated ladders.

Voltage (kV)	Current (mA) Samples 1	2	3
26.5	0.08	0.08	0.15
30.0	0.1	0.08	0.2
57.5	0.2	0.12	0.75
90.0	-	1.0	-
100.0	1.0	-	-
110.0	-	-	1.0
135.5	1.7	1.8	1.15

As specified in the safety codes of most countries, notes Karolon, nonconductive ladders should be used in all electrical installation and service work. However, the study shows the importance of keeping ladders well waxed for outdoor work.

Bethea Electrical Products bought

MUNDELEIN, IL—McLean-Fogg Co. has purchased Bethea Electrical Products, Birmingham, AL, and will operate it under the name of Reliable/Bethea Power Products Inc. Announcement of the purchase was made by Barry McLean, president.

Complementary lines

McLean-Fogg, a long-time manufacturer of fastenings and engineered components, purchased Reliable Power Products in 1986 as part of its diversification program. The company says the addition of Bethea serves to strengthen and extend the company's electrical product line. Reliable's and Bethea's product lines are complementary, McLean said.

Pricing

He also reported that although Bethea had operated under severe cost/price pressures over the past few years, the company's products will be priced to sell profitably in the future.

MARK T. HOSKE, Assistant Editor

Regulations, low demand hold new spending

BARRINGTON, IL—Regulatory and competitive pressures, excess capacity, and sluggish demand may hold down new spending for plants and equipment by investor-owned utilities during 1988, says The Conference Board, citing statistics compiled from industry groups.

The group said that among major gas and electric utilities, appropriations dropped 9.3 percent to $3.9 billion in the third quarter of 1987, compared to $4.3 billion a year before. Since appropriations indicate future spending levels, the picture for 1988 isn't quite as bright as hoped, The Conference Board noted.

Actual spending, however, increased to $6.4 billion in the third-quarter. (See table, page 3.)

Significant recovery, the CB predicted, won't come until the early 1990s. The CB is a New York-based, non-profit, economic-research group.

Other financial news and highlights follow. Figures listed are for the periods noted, while the percentage increase or decrease shows the change over the same period last year.

Centerior Energy Corp. (CLEVELAND)—Quarterly dividend payable in May: 40¢, down 38% from 64¢. Officials said they are confident they could sustain the new annual dividend rate of $1.60. The cut may help with a rate case in which Cleveland Electric Illuminating Co. and Toledo Edison Co. are trying to recoup some of a $3.5-billion net investment in two nuclear plants placed into service last year.

Citizens Utilities Co. (STAMFORD, CT)—Dividend payable in May: 33.5¢, or $1.34 annually, an 11.7% increase over the 1987 annual rate of $1.20. This increase is the 43rd consecutive one, cited officials of the electric, telecommunications, gas, water and wastewater utility, which serves some 500 communities in 11 states. Capital expenditures are to increase for 1988 to $88.1 million for expansion and replacement of facilities, with $27.3 million (31%) to be spent on electric facilities.

Consumers Power Co. (JACKSON, MI)—CPC is offering $250 million of 8.75% first-mortgage bonds due Feb. 15, 1998, with a "put option" to allow bondholders the chance to redeem them after five years. That provision will save approximately $500,000 per year in interest expense, due to the lower required interest rate. It is the largest single issue of first-mortgage bonds in the company's 102-year history, CPC reported. The proceeds will help repay short-term debt incurred to redeem various issues of preference stock and other high-cost securities.

General Public Utilities (PARSIPPANY, NJ)—Net 4th quarter income: $48.2 M, +5%. EPS: 77¢, +4¢. Electric sales: 8939 GWh, +4%. Net 1987 income: $259.1 M, +22.8%. An increase in kilowatthour sales and base-rate increases received in 1986 contributed to the 1987 gain, but was offset slightly by higher operating and maintenance costs.

Middle South Utilities (NEW ORLEANS)—MSU subsidiaries: Arkansas Power & Light Co., Mississippi Power & Light Co., New Orleans Public Service Co., and System Energy Resources Inc. all had their security ratings lowered by Moody's Investors Service in late March. The move followed a decision by NOPSI to omit a preferred dividend payment of $750,000, reflecting cash-flow pressures, Moody's said. If these pressures cause NOPSI to file for bankruptcy protection (as some observers believe) or fail in its payments to SERI, owner of the Grand Gulf nuclear plant, a default might be triggered at SERI, with possible negative credit implications for MSU and subsidiaries, said Moody's.

In addition, AP&L Co., based in Little Rock, AR, had its securities ratings lowered earlier in March because of regulatory and other risks related to changed accounting rules and the company's investment in Grand Gulf.

Philadelphia Electric Co. (PHILADELPHIA)—Moody's confirmed its debt, preferred-stock, and commercial-paper ratings of PE as a result of the company's management restructuring, which should lead to an orderly resolution of regulatory and financial pressure stemming from the March 1987 shutdown of the Peach Bottom nuclear units. PE is the operator and 42.5% owner. Financial and construction pressure from building Limerick Nuclear Unit 2 intensifies the need for Peach Bottom's startup, Moody's said.

Texas Utilities Co. (DALLAS)—Moody's lowered the fixed-income ratings of TU and its operating divisions, anticipating persistent delays in the licensing process for the utility's Comanche Peak Nuclear Station.

During mid-April, the utility plans to offer 5-million common shares to finance its construction program and to repay a portion of short-term borrowings incurred for similar purposes.

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